Fast Recovery Diodes (Hockey PUK Version), 350 A

DO-200AA

FEATURES

- High power FAST recovery diode series
- 1.0 µs to 2.0 µs recovery time
- High voltage ratings up to 2500 V
- High current capability
- Optimized turn-on and turn-off characteristics
- Low forward recovery
- Fast and soft reverse recovery
- Press PUK encapsulation
- Case style conform to JEDEC® DO-200AA
- Maximum junction temperature 125 °C
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free RoHS COMPLIANT

TYPICAL APPLICATIONS

- Snubber diode for GTO
- High voltage freewheeling diode
- Fast recovery rectifier applications

PRODUCT SUMMARY	
$I_{F(AV)}$	350 A
Package	DO-200AA
Circuit configuration	Single diode

MAJOR RATINGS AND CHARACTERISTICS					
PARAMETER	TEST CONDITIONS	VS-SD303C..C			UNITS
		S10	S15	S20	
$I_{F(AV)}$		350	350	350	A
	T_{hs}	55	55	55	°C
$I_{F(RMS)}$		550	550	550	A
	T_{hs}	25	25	25	°C
I_{FSM}	50 Hz	5770	5770	5770	A
	60 Hz	6040	6040	6040	
I^2t	50 Hz	166	166	166	kA^2s
	60 Hz	152	152	152	
V_{RRM}	Range	400 to 1000	1200 to 1600	2000 to 2500	V
t_{rr}		1.0	1.5	2.0	µs
	T_J	25	25	25	°C
T_J		-40 to 125	-40 to 125	-40 to 125	

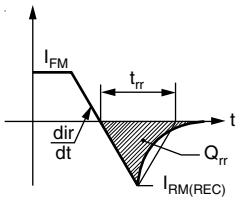
ELECTRICAL SPECIFICATIONS

VOLTAGE RATINGS				
TYPE NUMBER	VOLTAGE CODE	V_{RRM}, MAXIMUM REPETITIVE PEAK AND OFF-STATE VOLTAGE V	V_{RSM}, MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I_{RRM} MAXIMUM AT T_J = 125 °C mA
VS-SD303C..S10C	04	400	500	35
	08	800	900	
	10	1000	1100	
VS-SD303C..S15C	12	1200	1300	
	14	1400	1500	
	16	1600	1700	
VS-SD303C..S20C	20	2000	2100	
	25	2500	2600	

FORWARD CONDUCTION

PARAMETER	SYMBOL	TEST CONDITIONS			VALUES	UNITS
Maximum average forward current at heatsink temperature	$I_{F(AV)}$	180° conduction, half sine wave Double side (single side) cooled			350 (175)	A
					55 (75)	°C
Maximum RMS current	$I_{F(RMS)}$	25 °C heatsink temperature double side cooled			550	A
Maximum peak, one-cycle , non-repetitive forward current	I_{FSM}	t = 10 ms	No voltage reapplied	Sinusoidal half wave, initial $T_J = T_J$ maximum	5770	
		t = 8.3 ms			6040	
		t = 10 ms	100 % V_{RRM} reapplied		4850	
		t = 8.3 ms			5080	
Maximum I^2t for fusing	I^2t	t = 10 ms	No voltage reapplied		166	kA^2s
		t = 8.3 ms			152	
		t = 10 ms	100 % V_{RRM} reapplied		117	
		t = 8.3 ms			107	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied			1660	$kA^2\sqrt{s}$
Low level value of threshold voltage	$V_{F(TO)1}$	(16.7 % x π x $I_{F(AV)}$ < I < π x $I_{F(AV)}$), $T_J = T_J$ maximum			1.14	V
High level value of threshold voltage	$V_{F(TO)2}$	(I > π x $I_{F(AV)}$), $T_J = T_J$ maximum			1.63	
Low level of forward slope resistance	r_{f1}	(16.7 % x π x $I_{F(AV)}$ < I < π x $I_{F(AV)}$), $T_J = T_J$ maximum			1.14	mW
High level of forward slope resistance	r_{f2}	(I > π x $I_{F(AV)}$), $T_J = T_J$ maximum			0.77	
Maximum forward voltage drop	V_{FM}	I_{pk} = 1100 A, T_J = 25 °C; t_p = 10 ms sinusoidal wave			2.26	V

RECOVERY CHARACTERISTICS

CODE	MAXIMUM VALUE AT T_J = 25 °C	TEST CONDITIONS			TYPICAL VALUES AT T_J = 125 °C			
	t_{rr} AT 25 % I_{RRM} (µs)	I_{pk} SQUARE PULSE (A)	dI/dt (A/µs)	V_r (V)	t_{rr} AT 25 % I_{RRM} (µs)	Q_{rr} (µC)	I_{rr} (A)	
S10	1.0	750	25	- 30	2.4	52	33	
S15	1.5				2.9	90	44	
S20	2.0				3.2	107	46	

THERMAL AND MECHANICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum operating temperature range	T_J		- 40 to 125	°C
Maximum storage temperature range	T_{Stg}		- 40 to 150	
Maximum thermal resistance, junction to heatsink	R_{thJ-hs}	DC operation single side cooled	0.16	K/W
		DC operation double side cooled	0.08	
Mounting force, ± 10 %			4900 (500)	N (kg)
Approximate weight			70	g
Case style		See dimensions - link at the end of datasheet	DO-200AA	

ΔR_{thJ-hs} CONDUCTION

CONDUCTION ANGLE	SINUSOIDAL CONDUCTION		RECTANGULAR CONDUCTION		TEST CONDITIONS	UNITS
	SINGLE SIDE	DOUBLE SIDE	SINGLE SIDE	DOUBLE SIDE		
180°	0.010	0.011	0.008	0.008	$T_J = T_J$ maximum	K/W
120°	0.012	0.013	0.013	0.013		
90°	0.016	0.016	0.018	0.018		
60°	0.024	0.024	0.025	0.025		
30°	0.042	0.042	0.042	0.042		

Note

- The table above shows the increment of thermal resistance R_{thJ-hs} when devices operate at different conduction angles than DC

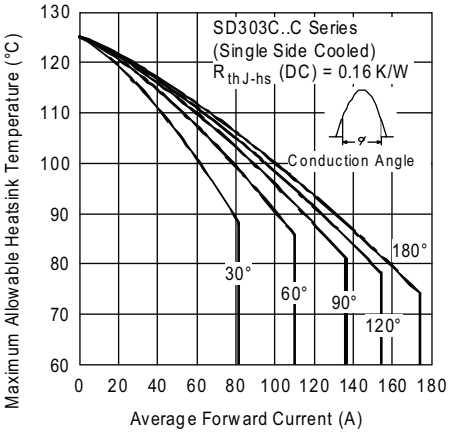


Fig. 1 - Current Ratings Characteristics

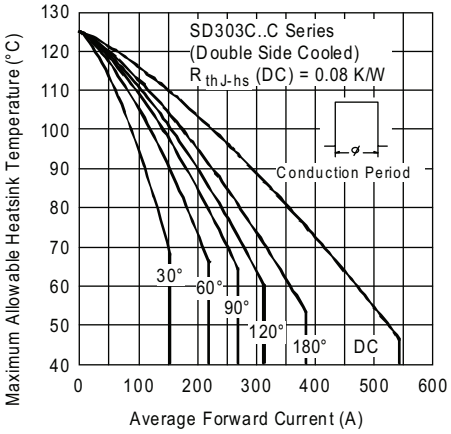


Fig. 4 - Current Ratings Characteristics

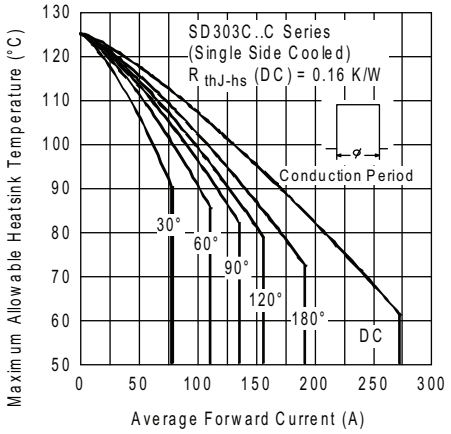


Fig. 2 - Current Ratings Characteristics

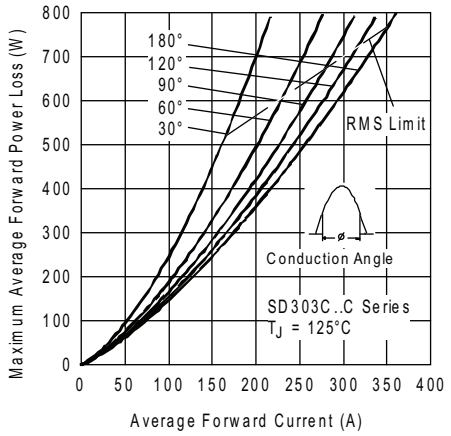


Fig. 5 - Forward Power Loss Characteristics

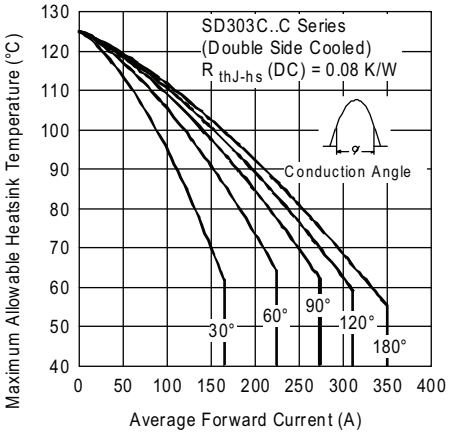


Fig. 3 - Current Ratings Characteristics

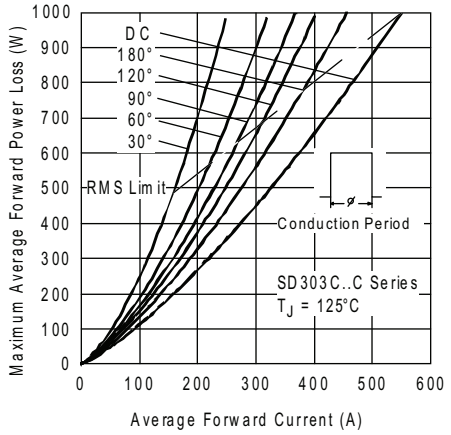


Fig. 6 - Forward Power Loss Characteristics

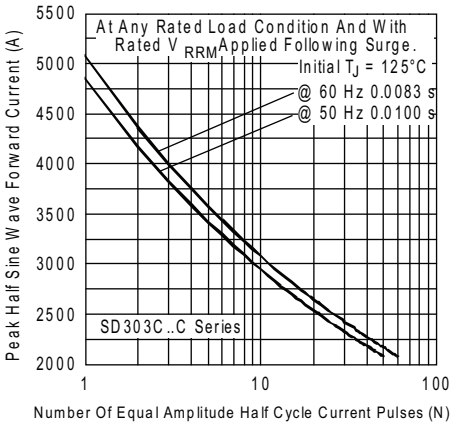


Fig. 7 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

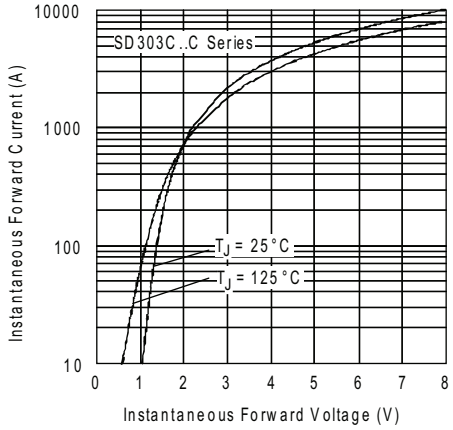


Fig. 9 - Forward Voltage Drop Characteristics

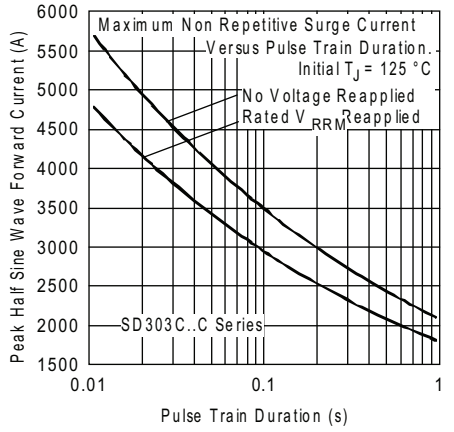


Fig. 8 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

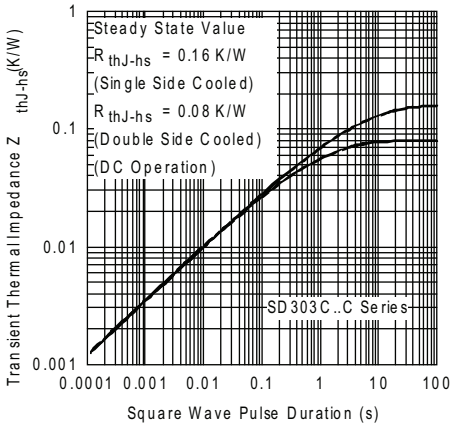


Fig. 10 - Thermal Impedance $Z_{thJ\text{-}hs}$ Characteristic

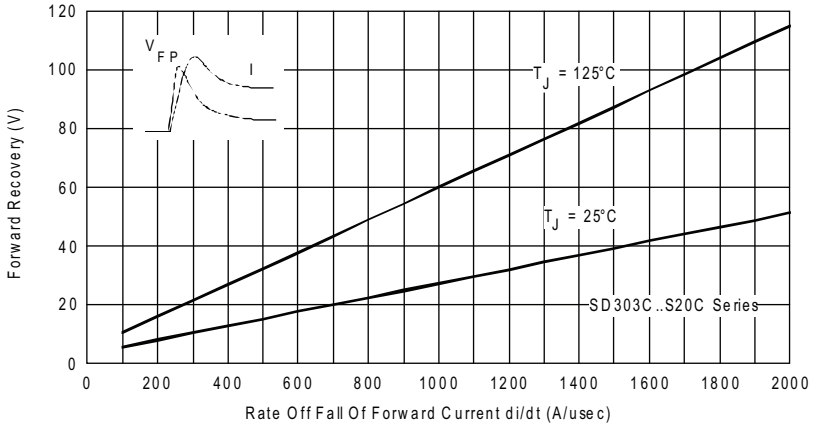


Fig. 11 - Typical Forward Recovery Characteristics

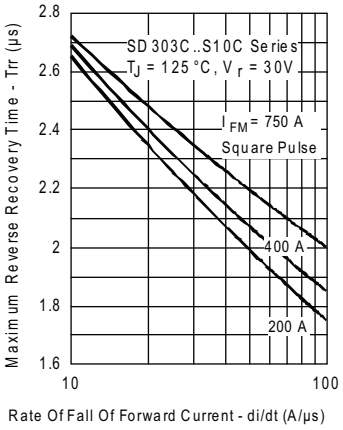


Fig. 12 - Recovery Time Characteristics

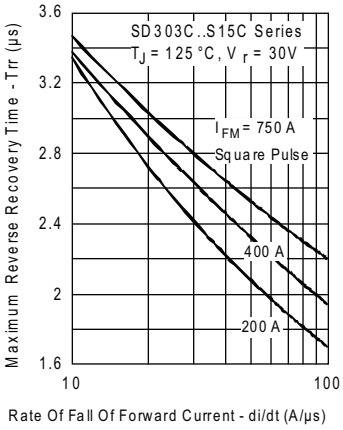


Fig. 15 - Recovery Time Characteristics

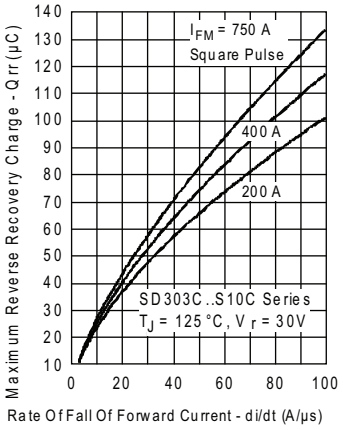


Fig. 13 - Recovery Charge Characteristics

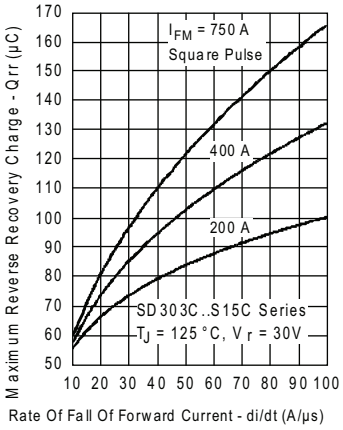


Fig. 16 - Recovery Charge Characteristics

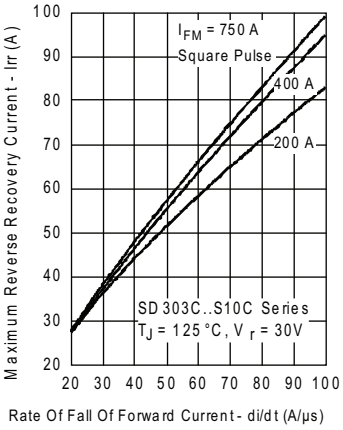


Fig. 14 - Recovery Current Characteristics

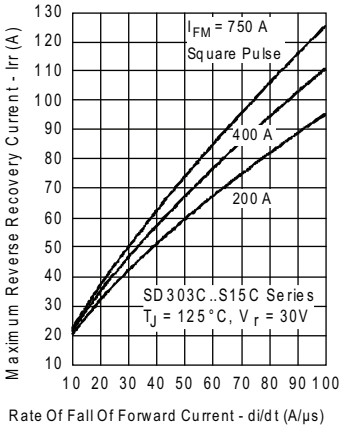


Fig. 17 - Recovery Current Characteristics

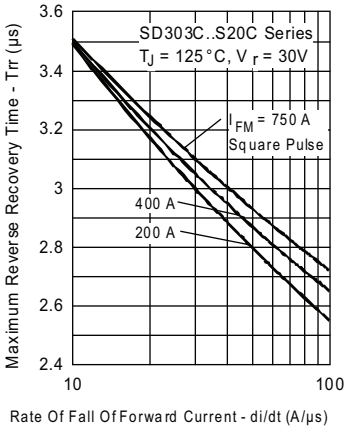


Fig. 18 - Recovery Time Characteristics

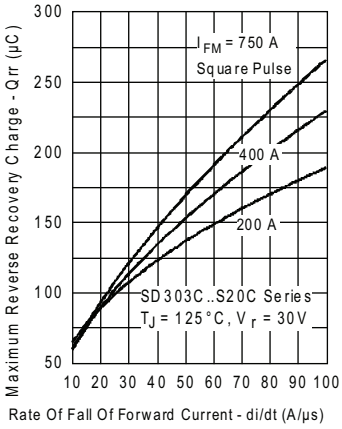


Fig. 19 - Recovery Charge Characteristics

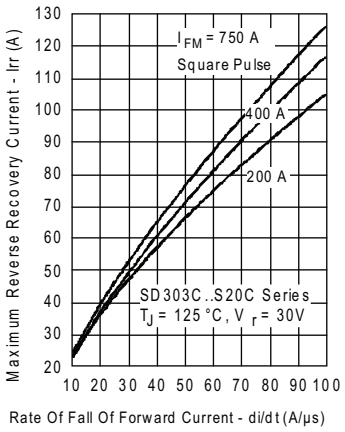


Fig. 20 - Recovery Current Characteristics

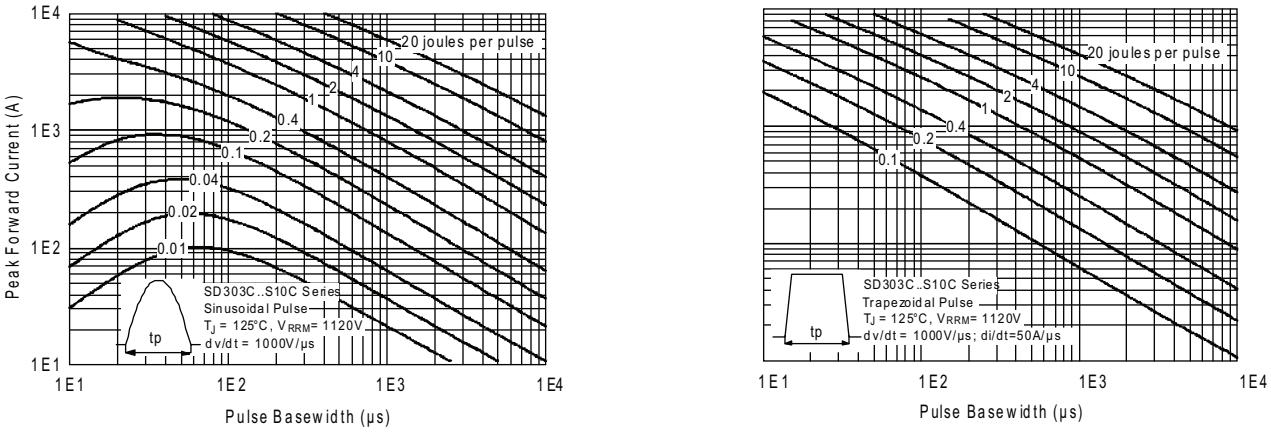


Fig. 21 - Maximum Total Energy Loss Per Pulse Characteristics

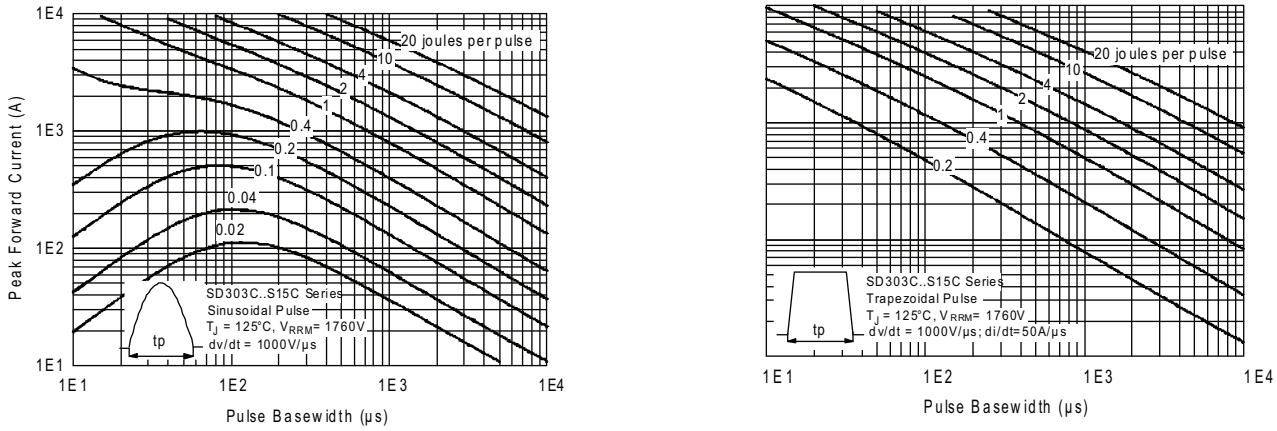


Fig. 22 - Maximum Total Energy Loss Per Pulse Characteristics

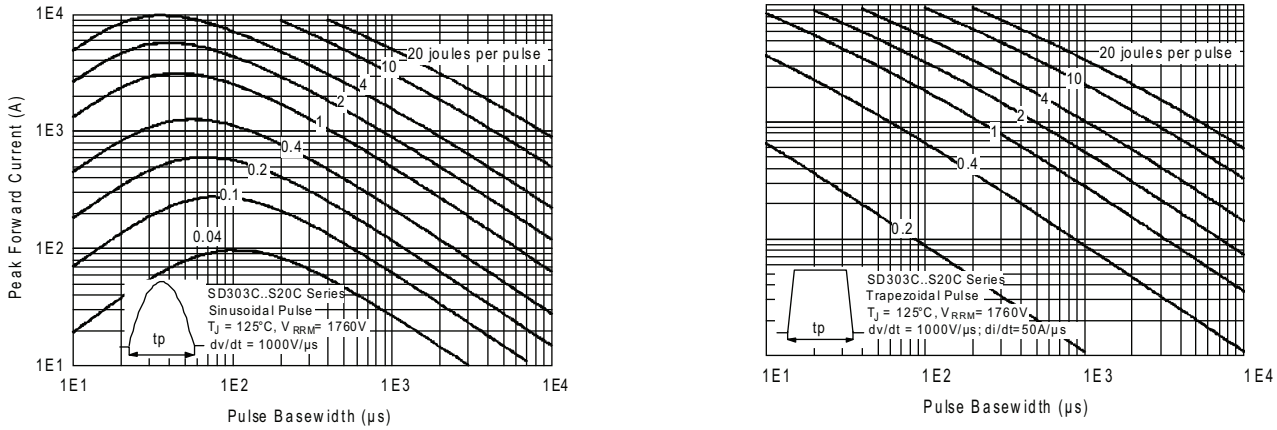


Fig. 23 - Maximum Total Energy Loss Per Pulse Characteristics

ORDERING INFORMATION TABLE

Device code

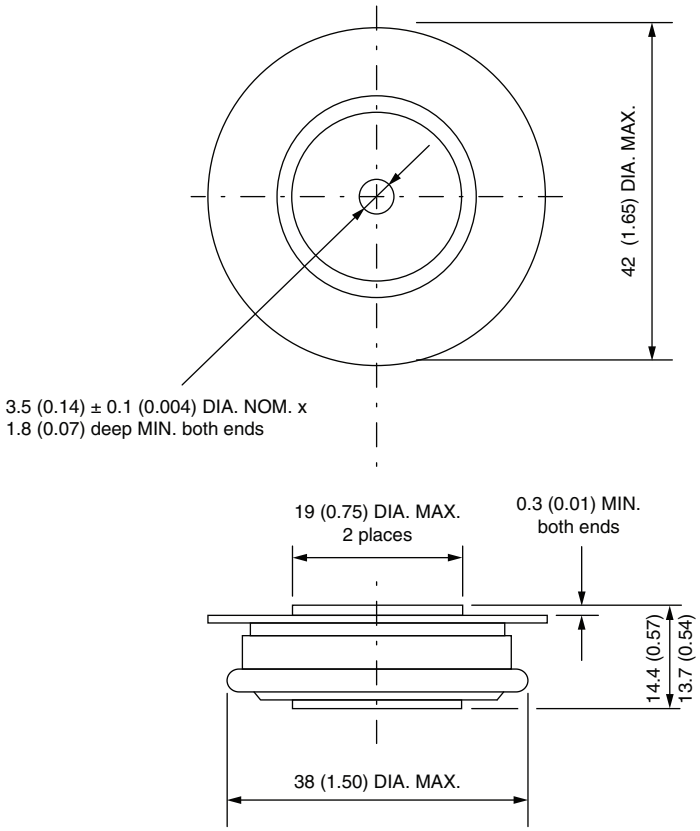
VS-	SD	30	3	C	25	S20	C
1	2	3	4	5	6	7	8

1 - Vishay Semiconductors product
2 - Diode
3 - Essential part number
4 - 3 = Fast recovery
5 - C = Ceramic PUK
6 - Voltage code x 100 = V_{RRM} (see Voltage Ratings table)
7 - t_{rr} code (see Recovery Characteristics table)
8 - C = PUK case DO-200AA

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95248

DO-200AA

DIMENSIONS in millimeters (inches)



Quote between upper and lower pole pieces has to be considered after application of mounting force (see Thermal and Mechanical Specifications)

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- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

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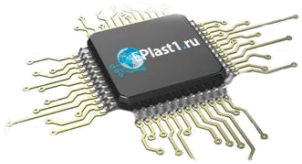
- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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